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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------|
| 10/733,598 | 12/11/2003 | Jon Opsal | TWI-14120 | 8227 |
| 28584 | 7590 | 02/11/2005 | | |
| STALLMAN & POLLOCK LLP SUITE 2200 353 SACRAMENTO STREET SAN FRANCISCO, CA 94111 | | | EXAMINER WACHSMAN, HAL D | |
| | | | ART UNIT 2857 | PAPER NUMBER |

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/733,598

Applicant(s)

OPSAL ET AL.

Examiner

Hal D Wachsman

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12-11-03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. This application is in condition for allowance except for the following formal matters:

a) The drawings are objected to because what is shown in Figure 1 was known in the prior art (see Background of the Invention in the specification) but has not been labeled as "Prior Art". In addition, the Brief Description of the Drawings does not refer to Figure 1 as prior art. Also, Figure 3 needs labeling (i.e. in words) to facilitate an understanding of the invention from the drawings. Appropriate correction is required.

b) The Abstract is objected to because it is greater than 150 words in length. Appropriate correction is required.

c) The use of the trademark Evolcity (see page 8 of the specification) has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks. Appropriate correction is required.

d) The statement of continuing data on page 1 of the specification does not provide the current status of U.S. application serial no. 09/906,290. Appropriate correction is required.

e) The listing of references in the specification (see pages 8 and 10 of the specification) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the

Art Unit: 2857

Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

f) The Examiner respectfully notes the following grammatical errors in the Brief Description of the Drawings:

"Figure 5 is illustrates..."

"Figure 6 is illustrates..."

"Figure 7 is illustrates..."

g) Claims 1-10 and 13 are objected to under 37 C.F.R. 1.75(a) for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Claim 1, lines 5-7, cite "...said ellipsometer including at least one of a polarizer, analyzer and compensator arranged so that the change in phase of the probe beam can be determined as a function of wavelength" which does not particularly point out exactly how at least one of a polarizer, analyzer and compensator are arranged to achieve what is stated here. This same type of problem also occurs in claim 6. Claim 1, lines 15-16, cite "...the assumption of the characteristics of the sample..." which it appears should be "...the initial assumption of the characteristics of the geometric feature...". Claim 2, line 2, cites "...in a manner..." however what exactly constitutes this manner? This same type of problem also occurs in claim 7. Claim 13 cites "An apparatus as recited in claim 12..." however claim 12 is a method claim. The examiner asks the applicant to better claim the limitations cited above. While the examiner

understands the intentions of the applicant he feels confusion could be drawn from the limitations cited above. Appropriate correction is required.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

2. The following references are cited as being art of general interest: Scheiner et al. (6,100,985) which disclose the measurement of patterned structures, Xu et al. (6,590,656) which disclose a spectroscopic scatterometer system and Opsal et al. (6,829,057) which disclose critical dimension analysis with simultaneous multiple angle of incidence measurements.
3. Claims 1-5 are allowable over the prior art because the prior art does not disclose or suggest: a processor system using an algorithm which includes a model of a geometric feature on a sample and which calculates a set of theoretical data at each of a plurality of wavelengths based on an initial assumption of the characteristics of the geometric feature and compares the theoretical data to normalized data derived from the output signals generated by a spectrometer and thereafter modifies the assumption of the characteristics of the geometric feature based on the results of the comparison and recalculates a new set of theoretical data, with the comparison and recalculation steps being repeated until the differences between the calculated theoretical data and the normalized data are minimized and wherein the calculation of theoretical data is

distributed by a master processor to slave processors and wherein each slave processor performs calculations at selected wavelengths in parallel.

Claims 6-10 are allowable over the prior art because the prior art does not disclose or suggest: a processor system for calculating theoretical data corresponding to the response of a theoretical sample to broadband radiation at a plurality of individual wavelengths, the processor system including a plurality of processor modules and with the calculations of theoretical data for selected wavelengths being distributed across the processor modules for performing the calculations in parallel and wherein the resulting theoretical data is compared to normalized data derived from the output signals of a spectrometer and wherein the characteristics of the theoretical sample is iteratively modified in order to minimize the differences between the calculated theoretical data and the normalized data.

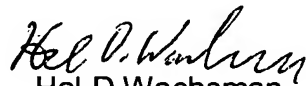
Claims 11-13 are allowable over the prior art because the prior art does not disclose or suggest: calculating theoretical data corresponding to the response of a theoretical sample to broadband radiation at a plurality of individual wavelengths, with the calculations of theoretical data for selected wavelengths being distributed across a plurality of processor modules for performing the calculations in parallel; comparing the resulting theoretical data to normalized data derived from output signals from broadband light reflected from a sample; and iteratively modifying the theoretical sample in order to minimize the differences between the calculated theoretical data and the normalized data to evaluate the characteristics of a geometric feature formed on the sample.

Art Unit: 2857

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal D Wachsman whose telephone number is 571-272-2225. The examiner can normally be reached on Monday to Friday 7:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Hal D Wachsman
Primary Examiner
Art Unit 2857

HW
February 6, 2005